CLMSPTO

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1. A system for forced intra-coding of a digital video signal composed of a sequence of image frames that comprise an entire image, each image frame comprising a plurality of macroblocks of pixels, said system comprising:

an input for receiving an image frame of the digital video signal;

a first memory for storing one or more macroblock access arrays, each macroblock access array containing a list of macroblock identifiers corresponding to macroblock locations within a predetermined region of the image frame;

an intra-refresh macroblock location identification element, operably connected to said first memory, for selecting one or more macroblock refresh identifiers from said one or more macroblock access arrays;

comparison logic for comparing said macroblock refresh identifiers with an identifier of a current macroblock; and

a block-based coding element, operably connected to said comparison logic and to said input,

wherein said block-based coding element is operable to force intra-coding of said current macroblock if the identifier of the current macroblock is equal to any of the one or more macroblock refresh identifiers.

2. A system as in claim 1 wherein at least one list of macroblock identifiers is a random permutation of the identifiers of macroblock locations within a corresponding predetermined region of the image frame.

3. A system as in claim 1, further comprising a second memory for storing said macroblock refresh identifiers.

4. A system as in claim 1, further comprising a second memory for storing an array of flags, one flag for each macroblock location, wherein said intra-refresh macroblock location identification element operates to set one or more flags within the array of flags that correspond to said macroblock refresh identifiers.

5. A system as in claim 4, wherein said block-based coding element is configured to force the current macroblock to be intra-coded if a corresponding flag within said array of flags is set.

6. A system as in claim 1, wherein said intra-refresh macroblock location identification element is operably connected to said input and is configured to select the one or more macroblock refresh identifiers whenever a new image frame is received by said input.

7. A system as in claim 1, wherein the digital video signal is spatially partitioned into one or more image regions covering the entire image.

8. A system as in claim 7, wherein the digital video signal is spatially partitioned into one or more mutually exclusive image regions.

9. A system as in claim 8, wherein the digital video signal is spatially partitioned into a plurality of mutually exclusive image regions comprising at least one interior image region containing no macroblock on an edge of the image frame and at least one exterior image region containing at least one macroblock on the edge of the image frame.

10. A system as in claim 9 wherein the at least one interior image region contains fewer macroblocks than the at least one exterior image region.

11. A system as in claim 8, wherein each boundary of the one or more mutually exclusive image regions is coincident with a macroblock boundary.

12. A system as in claim 7, wherein one or more of the one or more image regions are overlapping.

13 A system as in claim 1, wherein said block-based coding element is operable to code said current macroblock according to a standard video coding protocol if the identifier of the current macroblock is not equal to any of the one or more macroblock refresh identifiers.

claims 14-27 are cancelled

28. A device for coding digital video data of a digital image, comprising:

a first input for receiving uncompressed digital video data;

a first output for transmitting compressed digital video data;

a memory for storing one or more macroblock access arrays, each macroblock access array of the one or more macroblock access arrays containing a list of macroblock identifiers corresponding to a plurality of macroblock locations within a predetermined region of the digital image;

an intra-refresh macroblock location identification element, operably connected to said memory, for selecting one or more macroblock refresh identifiers from said one or more macroblock access arrays;

comparison logic for comparing said macroblock refresh identifiers with an identifier of a current macroblock; and

a block-based coding element, operably coupled to said comparison logic, said first input and said first output,

wherein said block-based coding element is operable to force intra-coding of said current macroblock if the identifier of the current macroblock is equal to any of the one or more macroblock refresh identifiers.

29. A device as in claim 28 further comprising:

a second input for receiving compressed digital video data;

a second output for transmitting uncompressed digital video data; and

a block-based decoding element operably coupled to said second input and said second output,

wherein said block-based decoding element operates to decode the compressed digital video data and thereby recover the uncompressed digital video data.

claims 30-35 are cancelled